

AEDC

Arnold Engineering Development Center
Arnold Air Force Base, Tenn. 37389

An Air Force Materiel Command Test Facility

Test Before Flight

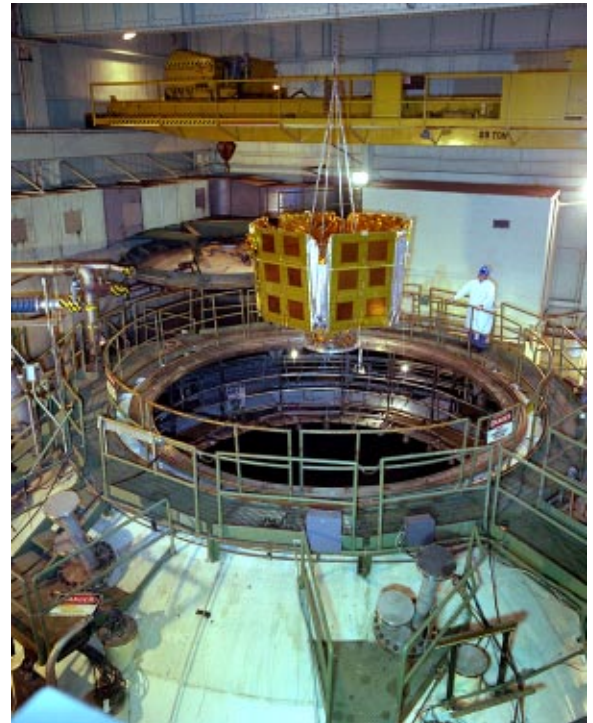


Mark 1 Test Facility

The Mark I Test Facility is a state-of-the-art space environment simulation test facility for full-scale space systems testing. Facility modifications replaced oil diffusion pumps with a completely dry pumping system in fiscal year 2000. Along with the pumping system upgrade, the interior of the chamber was cleaned and the surface of the liquid nitrogen thermal shroud was refinished. The existing Micro-Vax data system was replaced with a new Hewlett-Packard 3852, with 1500 channels of data capability. These upgrades combined with the sheer size of the facility, at 42-foot diameter by 82-foot, postures AEDC for future testing of full-scale satellites and other space systems in a clean environment.

Capabilities:

Thermal	Chamber is completely lined with a liquid nitrogen shroud that can provide thermal conditions down to 77 degrees Kelvin.
Vacuum Range	$\leq 5 \times 10^{-7}$ Torr to local atmospheric pressure.
Working Volume	36-foot diameter x 70-foot-tall.
Support Structure	200,000 pounds /12-foot-square seismic mass provides vibration isolated of test articles.
Pumping System	Mechanical roughing pumps, turbo molecular and cryogenic high vacuum pumps, all with cryogenic traps.
Loading	Vertical: 20-foot opening in top of chamber, via a 15-ton precision crane. Horizontal: 8-foot diameter manway in the chamber side near the bottom.
Cold Wall	Lined with 77 degrees Kelvin liquid nitrogen, cryogenic shroud.
Special Features	Laminar flow optical quality clean room (400 square foot, better than Class 1000). 15-ton precision crane.
Data	All facility data time tagged and archived. 1500 channel test data system available.
Work Areas	Test customer offices available. Limited hardware storage available. Two large bay areas available for test article build-up.
Solar Simulation	Infrared lamp arrays available for thermal cycling.
Other	15 degrees Kelvin gaseous helium cryopumping capability available.
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A Map Test in Mark I

Photo # 00-04407



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Release # 2000-264